Energy Ball**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Demonstration: Teacher Handout**

**Learning Goals (based on the Ministry of Education expectations):**

**-**topredict the ability of different materials (conductor and insulator) to hold or transfer electric charges

-to investigate series circuits and the impact of open and closed circuits on electricity flow

**Introduction:**

In this demonstration we will be using an Energy Ball, a small device with two small metal electrodes. When the two electrodes are touched simultaneously, the circuit is completed so that the device flashes and makes a sound. The slightest conduction between the two electrodes activates the spheres.

Note: Only use this demonstration if your classroom culture is comfortable to touch hands. This is a good demonstration for Valentine’s Day.

**Safety:** No safety precautions are required for this experiment.

**Materials:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Energy ball | Paper Clip | Aluminum Strip | Paper Strip | Water in a bowl |

**Minds On:**

What is an open circuit? What is a closed circuit? Pose the questions as a starting discussion point. An open circuit does not allow electricity to flow as there is a gap in the circuit. A closed circuit allows electricity to flow as there is no break in the circuit.

**Action:**

1. Make a circle with the group of students and have them hold hands.
2. Give one student the energy ball and have them touch one electrode. Have the person next to them, touch the other electrode.
3. Have one student touch a sleeve instead of a hand.
4. Have a pair of students next to each other hold a paper clip instead of a hand.
5. Have a pair of students next to each other hold an aluminum strip instead of a hand.
6. Have a pair of students next to each other hold a paper strip instead of a hand.
7. Have a pair of students next to each other place their hands in a bowl of water, instead of holding hands.

Note: Be creative with this demonstration and use any other classroom materials (eg. Chalk, ruler, pen)

**Consolidation:**

From steps 2-7 ask the students three questions:

Encourage students to share their observations, claims, and evidence.

1. Predict what will happen to the Energy ball?
2. What happened to the Energy ball and why?
3. Is this an open or closed circuit?
4. Is the material a conductor or insulator?

Answers for the consolidation questions.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Energy ball (Works/does not work)** | **Open/Closed circuit** | **Conductor/Insulator** |
| Holding hands (Step 2) | Works | Closed | Conductor |
| Holding a sleeve (Step 3) | Does not work | Open | Insulator |
| Holding a paper clip (Step 4) | Works | Closed | Conductor |
| Holding aluminum (Step 5) | Works | Closed | Conductor |
| Holding a paper strip (Step 6) | Does not work | Open | Insulator |
| Hand in bowl of water (Step 7) | Works | Closed | Conductor |